

# Virgin Coconut Oil and antimicrobial activity



Lipids naturally found in human skin are part of the body's innate immunity for first line antimicrobial defense. Initial studies on lipid antimicrobials (LAMs) were pursued in the 1930s but with the emergence of penicillin and synthetic antibiotics, studies were discontinued. Now with the emergence of antibiotic resistance and toxic and allergic reactions, interest has been revived in LAMs. Pioneering studies by Dr. Kabara that measured bacterial growth inhibition by virtue of chain length and degree of saturation of fatty acids demonstrated broad spectrum activity against bacteria, fungi and viruses.

Results of a study on the Antimicrobial agents derived from fatty acids revealed that "In general, lauroyl derivatives are the most effective. The safety and efficacy of fatty acid esters as potential germicides offer new and expanded roles for oleochemicals".<sup>1</sup>

The most antimicrobial are coconut lauric and capric saturated fatty acids and their monoacyl glycerides. The hydrocarbon tails of these saturated fatty acids insert into the lipid bilayer of bacterial cell membranes to cause destabilisation and eventual dysfunction, that too within minutes. This precise targeted mechanistic activity deters bacteria to resist since to mutate its own cell membranes is low or nil. Multiple functions plus wide availability, renewability and relatively low cost of Coconut saturated fatty acids serve as attractions to develop them further. To enhance patentable modes of delivery, promising bench research using nanotechnology now bestows the promise of translation to wider clinical applications for LAMs.<sup>2</sup>

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Lauric acid and capric acid present in virgin coconut oil is responsible for the antimicrobial activity. Lauric acid is converted to monolaurin and capric acid to monocaprin in the body during digestion. Monolaurin and monocaprin are the antiviral, antibacterial, antiprotozoal monoglyceride which destroys the microbes in the body.

1. Antimicrobial agents derived from fatty acids by John J. Kabara – JAOCs February 1984; Vol 61(2) (Put Kabara study first since he was the pioneer, Dr. Rowell continued inspired from his study)

2. Excerpt from the invited paper: "Lipid Antimicrobials Revisited in the Age of Antibiotic Resistance" presented by Dr. Vermen M. Verallo-Rowell, Director, VSRC Clinical Research Testing and Product Development, Philippines at the 2nd International Conference on Coconut Oil 2017, Bangkok, Thailand during 15-18 March 2017